

***Pertusaria wui* sp. nov. on bamboo from Yunnan, China**

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ABSTRACT—A new species *Pertusaria wui* is described from bamboo in Yunnan Province, China. Diagnostic characters include a thin, shiny, off-white, continuous and crustose thallus, numerous (mostly conical) verrucae with punctiform ostioles, uniseriate ascospores of $47.5\text{--}62.5 \times 25\text{--}30\ \mu\text{m}$, 8-spored asci, and major lichen compounds lichexanthone and stictic acid.

KEY WORDS—lichenized Ascomycota, *Pertusariaceae*, *Pertusariales*, taxonomy

Introduction

After molecular and allied data by Lumbsch & Schmitt (2001) indicated that *Pertusaria* DC. s.lat. was polyphyletic, Schmitt & Lumbsch (2004) identified three well-supported clades: */Pertusaria* s.str., */Varicellaria*, and */Variolaria*. Archer & Elix (2016) divided *Pertusaria* DC. s.lat. into three subgenera, *P.* subg. *Monomurata* A.W. Archer, *P.* subg. *Pionospora* Th. Fr., and *P.* subg. *Pertusaria* based on morphological and chemical characters. However, the molecularly supported clades were elevated to the genera as *Pertusaria* DC. s.str., *Varicellaria* Nyl., and *Leptra* Scop. (Schmitt & al. 2012; Hafellner & Türk 2016; Wei & al. 2017), genera currently accepted by lichenologists (Archer & Elix 2018; Zhou & Ren 2018; Ren 2019). *Pertusaria* s.lat. in China was first annotated by Zhao & al. (2004), additional new taxa and new records have been published (Ren & al. 2008, 2009a,b; Ren & Kou 2013; Ren 2013, 2014, 2015; Ren & Zhao 2014; Zhang & Ren 2016). As part of a continuing study of *Pertusaria* s.str. from

China, we re-examined previously unidentified specimens to discover that a single KUN specimen represented a new species, described here as *Pertusaria wui*.

Materials & methods

The examined specimen is deposited in the Herbarium, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming, China (KUN). It was examined microscopically under an Olympus SZX16 dissecting microscope and a Zeiss Axioskop 2+ compound microscope; chemical substances were identified by thin-layer chromatography using solvents A, B, and C (Elix 2014) and compared with authentic samples. We photographed the specimen with a Nikon D700 fitted with a Micro-Nikkor 105 mm f/2.8G AF-S VR IF-ED lens.

Taxonomy

Pertusaria wui Q. Ren, sp. nov.

FIG. 1

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Differs from *Pertusaria tetralthalamia* by its 8-spored asci and its lack of 4,5-dichlorolichexanthone.

TYPE—China. Yunnan Province, Nanjian County, Mt. Dadian, 24.85°N 100.57°E, on bamboo, 21 Mar. 2012, L.S. Wang 12-32980, X.Y. Wang & D. Liu (Holotype, KUN).

ETYMOLOGY—honoring the late Prof. Jinong Wu, who contributed greatly to Chinese lichen research.

THALLUS off-white, thin; surface smooth, shiny, continuous, lacking isidia and soredia. APOTHECIA conspicuous, concolorous with thallus, numerous, verruciform, frequently conical and smooth, generally dispersed and only locally fused, 0.5–0.8(–1.5) mm in diameter. Ostioles conspicuous, black, punctiform, 1–3(–5) per verruca, surrounded by a white border, mostly level with verruca surface but occasionally papillate. ASCOSPORES 8 per ascus, longitudinally uniseriate, hyaline, ellipsoid, $47.5\text{--}62.5 \times 25\text{--}30\ \mu\text{m}$; ascospore wall smooth, c. $5\ \mu\text{m}$ thick except for thicker (c. $10\ \mu\text{m}$) end wall. PYCNIDIA not observed.

CHEMISTRY—Cortex UV+ yellow-orange, all chemical tests negative. Medulla K+ yellow, C–, KC–, Pd+ yellow, then orange. Lichexanthone and stictic acid detected.

DISTRIBUTION—Currently known only from the type locality in Yunnan.

COMMENTS—*Pertusaria wui* is characterized by the numerous conical verrucae, asci with 8 uniseriate smooth-walled ascospores, and the presence of lichexanthone and stictic acid. The new species closely resembles *P. tetralthalamia* (Fée) Nyl. from North America and China (Dibben 1980;

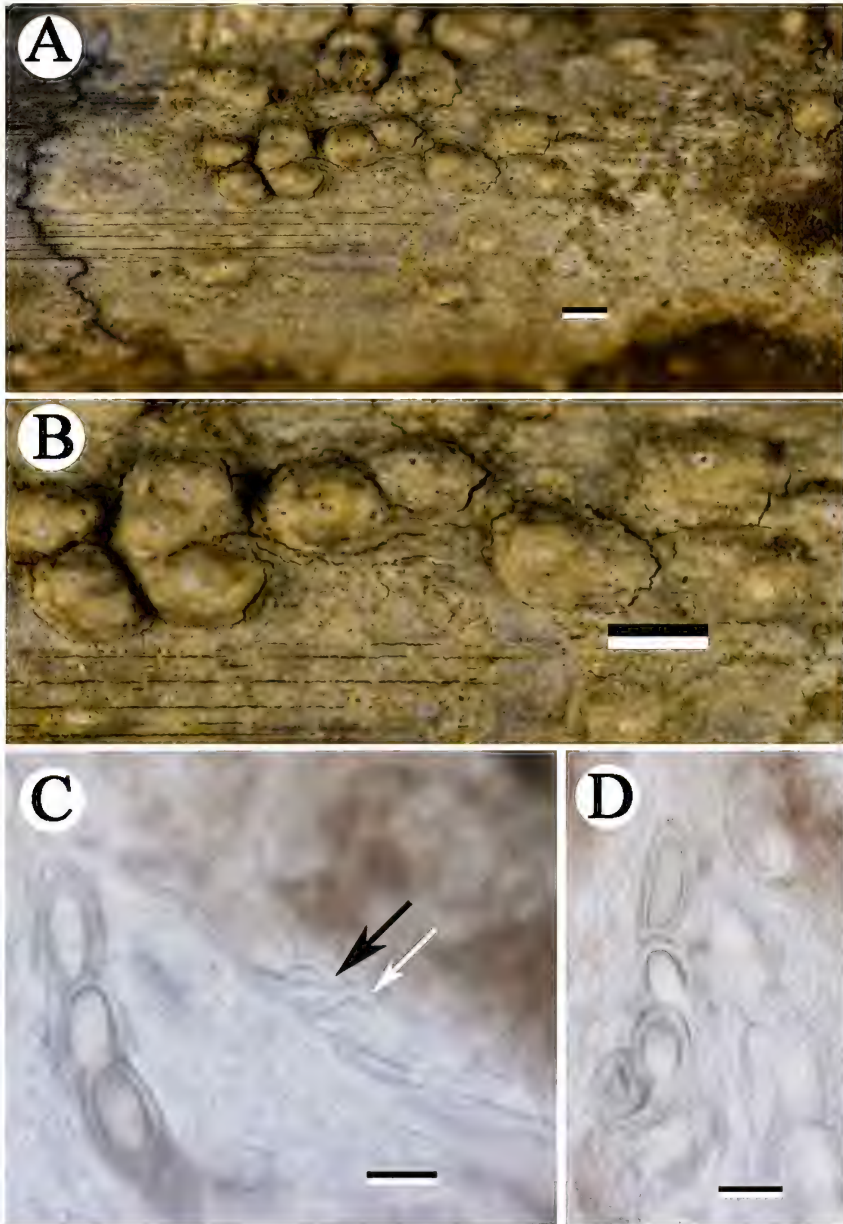


FIG. 1. *Pertusaria wui* (KUN – Wang 12-32980). A. Thallus with substratum; B. Apothecia, detail; C. Asci with mature or immature ascospores, arrows pointing to eight uniseriate and immature ascospores within one ascus; D. Mature ascospores. Scale bars: A, B = 1 mm; C, D = 30 μ m.

Zhao & al. 2004) in also presenting conspicuous black ostioles and mostly simple verrucae, but *P. tetrathalamia* has 4-spored asci and contains stictic acid and 4,5-dichlorolichexanthone.

Beside the new species, only four other *Pertusaria* species possess 8-spored asci and contain lichexanthone and stictic acid as major lichen substances. Among them, *Pertusaria nigrata* Kremp. from Brazil (Krempelhuber 1876) and Sri Lanka (Weerakoon & Aptroot 2014) is most similar to the new species but differs in having longer ascospores (75–90 µm). The other three species are *P. dehiscens* Müll. Arg., *P. fosseyae* A.W. Archer & al., and *P. parnassia* Vain. Their differences from *P. wui* are indicated in the key below.

Key to *Pertusaria* spp. having 8-spored asci and lichexanthone + stictic acid as major lichen substances

- 1. Thallus sorediate (spores 2-seriate, 98–111 µm long);
 Kahuzi & Virunga mountain ranges in East Africa's Albertine Rift ... *P. fosseyae*
- 1. Thallus esorediate 2
- 2. Spore walls rough (spores 110–180 µm long);
 Guadeloupe, West Indies *P. parnassia*
- 2. Spore walls smooth 3
- 3. Spores 2-seriate (90–140 µm long);
 Australia, Brazil, Chile, India, Sri Lanka *P. dehiscens*
- 3. Spores 1-seriate 4
- 4. Spores 75–90 µm long (Brazil & Sri Lanka) *P. nigrata*
- 4. Spores 47.5–62.5 µm long (China) *P. wui*

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